4.7 Rock Filter Dam

RdA

Definition

Permanent or temporary stone filter dam installed across streams or drainageways.

Purpose

A rock filter dam is installed to serve as a sediment-filtering device in drainage ways. In some cases, the structure may reduce the velocity of stormwater flow through a channel. The rock dam is not intended to substantially impound water.

Conditions

This practice is applicable for use in small channels that drain 50 acres or less. To reduce the amount of sediment reaching the channel, rock filter dams must be used in conjunction with other appropriate sediment control measures. Specific applications include:

1. Use as an additional sediment control measure below construction projects such as culvert installations, dam construction, or any project that may involve grading activity directly in a stream.

2. Use at the upstream end of ponds or lakes to trap incoming sediment loads.

Before structures of any kind are installed in streams, the appropriate agencies and local officials should be contacted.

Design Criteria

It is recommended that a qualified engineer be consulted before any structure is installed in a flowing stream. Installation requirements are shown on Figure 4.7.1. The following standards must be followed:

Drainage Areas

Drainage areas shall not exceed 50 acres.

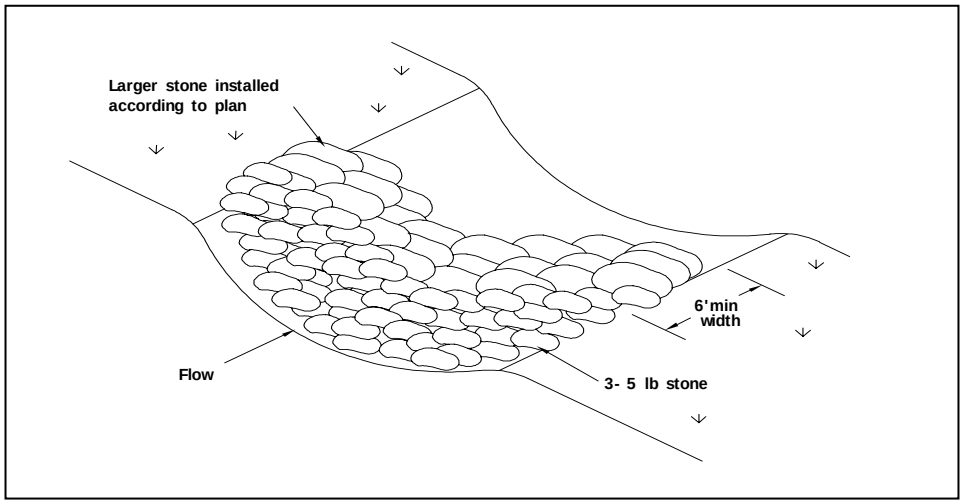

Figure 4.7.1 Rock Filter Dam Installation Requirements

Height

The rock filter dam should not be higher than the channel banks or the level due to a 10-year, 24-hour storm or the storm specified by local ordinance. The center of the rock dam should be at least 6 inches lower than the outer edges of the dam at the channel banks.

Side Slopes

Side slopes shall be no steeper than 2:1.

Location

The rock dam should be located so that it will not cause water to backup on upstream adjacent property. Dam height should not exceed elevation of upstream property line.

Rock Size

Minimum rock size shall be determined by peak channel flow velocity per Table 4.7.1. The rock dam can be faced with smaller stone on the upstream side for additional filtering effect. Flow velocities in excess of 10 feet per second require a design prepared by a registered professional engineer and are subject to governing agency approval.

Top Width

The top width of the rock dam should be no less than 6 feet.

TABLE 4.7.1

Graded Riprap Stone

Flow Velocity (ft./sec.)	N.S.A. No.[1]	Size Inches			Filter Stone N.S.A. No.[1]
		Max.	Avg.[2]	Min.	
2.0	R-1	1½	¾	No. 8	FS-1
4.0	R-2	3	1½	1	FS-1
6.0	R-3	6	3	2	FS-2
8.0	R-4	12	6	3	FS-2
10.0	R-8	18	9	5	FS-2
12.0	R-6	24	12	7	FS-3
14.0	R-7	30	15	12	FS-3

[1] National Stone Association

[2] At least 50% of the individual stone particles must be equal or larger than this listed size.

Construction Specifications

Mechanical or hand placement will be required to ensure that the rock dam extends completely across the channel and securely ties into both channel banks. To serve as a type of weir, the center of the dam must be no less than 6 inches lower than the sides. Gabions can be installed to serve as rock filter dams but recommended sizing and installation specifications must be followed.

Maintenance

Rock dams should be removed at the completion of their useful life. Periodic inspection and required maintenance must be provided. Sediment should be removed when it reaches a depth of one-half of the original height of the dam.